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EDITED BY GEORGE DIMMOCK AND B. PICKMAN MANN.

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The Nervous System and Salivary Glands of Phylloxera.

I have read with interest the remarks of Dr. E. L. Mark upon this subject in PSYCHE for January. He is without doubt right in his conclusion that what I have inadvertently called nervous cords are, in reality, the tracheae ; I have been of this opinion for some time. Dr. Mark's article suggests, however, another thought which induces me to write these few lines. M. Maxime Cornu has, under the direction of the French Academy, made extended investigations into the nature of the root swellings caused by *Phylloxera vastatrix*, arriving at the conclusion, to me somewhat surprising, that they are purely the result of the mechanical action of the puncture made by the insect, and of the subsequent absorption of liquids. These results are recorded in an extended and elaborately illustrated memoir.[1] I have always believed Cornu's conclusions essentially erroneous, for the following reasons, which I quote from my 6th Report on the insects of Missouri, 1873, p. 70.

"For a very minute and careful study of the pathological characteristics of these swellings, the reader may refer to Maxime Cornu's excellent papers in the Comptes Rendus, for 1873, and Mémoires (xxii, no. 6) of the Académie des Sciences, Paris. He corroborates, by detailed observations, the conclusions previously arrived at by Planchon and his followers ; but, like too many of his countrymen, very generally ignores observations made out of France, and consequently sometimes repeats as original, facts recorded elsewhere with less of detail. He concludes that the Phylloxera is not nourished by the sap of the plant, but by plasmatic material which the

[1] Maxime Cornu. Etudes sur le Phylloxera vastatrix. Paris, 1878.

latter stores up. He also concludes that the swellings are produced solely by the mechanical action of the tongue, and that they in themselves are the cause of the trouble, by absorbing in their development, the nourishment needed for the vine, and by affecting, in rotting, the parts not touched by Phylloxera: in other words, that the amount of nourishment appropriated by the lice would never seriously affect the vine, were it not for the characteristic and intrinsic swellings. I can not accept the last two conclusions. There is a strong *a priori* probability that the swellings are due to something more than mere mechanical action — to some poisonous excretive fluid, as in many gall-flies (*Cynipidæ*) and saw-flies (*Tenthredinidæ*); or to some irritating and poisonous property of the proboscis, as in the spines and hairs of many larvæ. We may not be able to analyze it, but it is difficult to understand how, without some such poisonous property, the Phylloxera leaf-gall is developed, while so many other plant-lice perform similar mechanical acts to that performed by Phylloxera without causing abnormal growths on the plants they infest. Bearing in mind also, the withering and blasting effects which many plant-lice and bark-lice cause to plants which never swell abnormally from their punctures, it would seem obvious that with the vine roots covered with Phylloxeræ, most of them rapidly developing and multiplying, the direct loss of plant substance must be very material — however great the indirect loss through the swellings may be. There are any number of plant-lice no larger than our Phylloxera, and which there is every reason to believe appropriate no more for the nourishment of their bodies, which nevertheless affect most seriously the plants they inhabit by direct sucking of the plant juices."

Do not the anatomical researches of Targioni-Tozzetti and Mark, in showing the possession, by Phylloxera and other Aphididae, of such conspicuous salivary glands, lend additional weight to my view of the subject, and do they not give strong presumptive evidence that there is introduced into the plant-tissues, with the puncture of the proboscis, a secretion which acts upon the plant in a peculiar manner, according to the species? In other words, have we not a right to assume an analogy between the puncture of the aphididan proboscis and the cynipidan ovipositor? On no other hypothesis can we explain, with any degree of satisfaction, the production of a dozen or more essentially different gall-growths (as by the different species of Phylloxera affecting the hickory) on the same plant by insects differing in no appreciable manner from each other, so far as size and structure of proboscis are concerned.

C. V. Riley.

Washington, D.C., 20 Feb., 1879.

Editors of Psyche: At the bottom of p. 147, v. 2, I have stated that "I have never met with a Lithocolletis pupa in the winter or spring." The reader will please interpolate the words "of the flat group" after the word pupa, as it is intended to apply only to that group. So far as I have observed, the species of the cylindrical group always hibernate as pupae; and I have taken *L. ornatella* from its cocoons in January in both conditions — as larva and pupa. The statement on p. 142 that *Gracilaria robiniella* undergoes the change mentioned at the fifth stage is incorrect. *Lithocolletis robiniella* does so; but *G. robiniella* assumes that character of trophi at the third stage.

The statement that there are eight larval stages is perhaps made too positively. It is the conclusion to which I was led by careful examinations of a great many larvae, and I am fully convinced that the number cannot be less than seven. But owing to the difficulty in determining the matter accurately (suggested at p. 138), there is a possibility of error. Whether the number is eight or less the other statements in the paper are not affected thereby. The change in the character of the trophi and in the larval habits takes place at different stages in the different groups.

V. T. Chambers.

Covington, Ky., 16 Feb., 1879.

Editors of Psyche: On reading my address to the Club, as printed in Psyche, I find so many improvements that I hardly recognize my own work and suggest the title should have been "The opinion of the editors of Psyche as to what the second annual address of the president should be."

Although I have no doubt the printed address is much better than the one actually delivered, still I do not wish to sail under false colors, and trust you will give place to this little note in acknowledgement of the improvements made in it.

I would also like to be permitted to suggest that I did not make any excuse for speaking of the geographical distribution of Coleoptera, but only for not including the other groups as well as Coleoptera. Neither do I consider that Coleoptera possess any special advantages over other groups in the study of questions of distribution as would be inferred from the printed statement, in fact some other groups are no doubt better suited to that purpose than the Coleoptera.

A number of notes which I had prepared for insertion were omitted, as I received no proof before the paper was printed. In the list of collections, which I have indicated as containing material deserving of publication, I have only included such as were known to me, either by personal inspection or from exchanges with the collectors. There are doubtless several other equally valuable collections which should be included in a list. Among others the collection of Mr. Henry Edwards, is probably the most valuable in existence for Pacific coast species.

It may also be advisable to state that I did not mention the collections of Drs. Horn and LeConte, as most of the material contained in them has already been made use of in the various papers published by these gentlemen. *E. P. Austin.*

BIBLIOGRAPHICAL RECORD.

(*Continued from page* 224.)

The date of publication, here given in brackets [ ], marks the time at which the work was received by the Editor, unless an earlier date of publication is known to him. An asterisk * before a title is the Recorder's certificate of accuracy of quotation. Corrections of errors and notices of omissions are solicited. — B. Pickman Mann.

Nos. 1103 to 1135 are from **Can. Entom.**, v. 8.

* 1103. S. H. Peabody. Inquiries concerning the genera of Mr. Scudder's "Systematic revision." p. 141–148. [Aug., 1876.]

Analyses in tabular form Scudder's descriptions of the genera of the tribe Adolescentes, to show the impracticability of distinguishing the genera; argues that the differences stated are not of more than specific value.

* 1104. W: H. Edwards. No. of broods of Danais archippus. p. 148. [Aug., 1876.]

There are at least three broods of *D. archippus* in West Virginia in a year.

* 1105. Ja: Behrens. Description of a new Saturnian. p. 149. [Aug., 1876.]

Describes *Saturnia* (*Aglia*) *mendocino* n. sp., from Cal.

* 1106. A: R. Grote. Notes on Geometridae. p. 152–154. [Aug., 1876.]

Synonymy of several genera and species.

* 1107. L. F. Harvey. New Noctuidae. p. 154–156. [Aug., 1876.]

Describes *Mamestra orobia*, *Gortyna appasionata*, *Homoptera stylobata*, *H. mima* = 4 n. spp.

* 1108. A: R. Grote. New Pyralides. (II.) p. 156–158. [Aug., 1876.]

Describes *Emprepes novalis*, Mochlocera, *M. zelleri*, *Zophodia dentata* = 1 n. g., 3 n. spp.; notes on other species.

* 1109. W: H. Edwards. Correspondence. p. 160. [Aug., 1876.]

Prof. P. C. Zeller condemns the efforts of lepidopterists to resuscitate Hübner's names.